

CHERNIKOV, Oleg Anatol'yevich; TEODOROVICH, G.I., doktor geol.-
mineral.nauk, otv. red.; SHLEPOV, V.K., red. izd-va;
VOLKOVA, V.V., tekhn. red.

[Lithology of Lower Carboniferous Sediments in the south-
western margin of the West Siberian Plain] Litologiya nizhne-
kamennougol'nykh otlozhenii iugo-zapadnogo obramleniia Zapadno-
Sibirskoi nizmennosti. Moskva, Izd-vo Akad.nauk SSSR, 1961.
108 p. (MIRA 15:2)
(West Siberian Plain—Petrology)

KOLGINA, Lyudmila Pavlovna; OR'YEV, Leonid Grigor'yevich; RABIKHANUKAYEVA, Yelizaveta Semenovna; CHERNIKOV, Oleg Anatol'yevich; CHEPIKOV, K.R.,
otv. red.; PERSHINA, Ye.G., red. izd-va; ROMANOV, G.N., tekhn. red.

[Lithology and distribution characteristics of reservoir rocks of the Jurassic and lower Cretaceous of the West Siberian Plain] Litologiya i zakonomernosti razmeshcheniya porod-kollektorov v otlozheniyakh iury i nizhnego mela Zapadno-Sibirskoi nizmennosti. Moskva, Izd-vo Akad. nauk SSSR, 1961. 123 p.
(MIRA 14:7)

1. Chlen-korrespondent AN SSSR (for Chepikov)
(West Siberian Plain—Petrology)

VELIKOVSKAYA, E.M.; VEYMARN, A.B.; VERGUNOV, G.P.; APRODOV, V.A.; LYUSTIKH,
Ye.N.; LIPOVETSKIY, I.A.; ROMASHOV, A.N.; FEL'DMAN, V.I.; SAVCHENKO,
Ye.N.; GEND'ER, V.Ye.; ROSENSON, B.M.; DOBROCHETOVA, Ye.S.;
LYUBIMOVA, L.V.; KHMARA, A.Ya.; VESELOVSKAYA, M.M.; KUDRIN, L.N.;
CHERNIKOV, O.A.; SOROKIN, V.S.; IL'IN, A.N.; FLOROVSKAYA, V.N.;
ZEZIN, R.B.; TEPLITSKAYA, T.A.; BRUSILOVSKIY, S.A.; KISSIN, I.G.;
CHIZHOVA, N.I.; PAVLOVA, O.P.; SHUTOV, Yu.I.

Supplements. Biul. MOIP. Otd. geol. 39 no.4:155 JI-Ag '64.

(MIRA 17:10)

CHERNIKOV, O.A.

Methods for the determination of the extent of the change in the structure of clastic rocks. Lit. i pol. iskop. no.6:116-120 N.D '64.
(MIRA 28:3)

1. Institut geologii i razrabotki goryuchikh iskopayemykh, Moskva.

CHERNIKOV, O.A.

Metamorphic coefficient "C." Lit. i pol. iskop. no.2:181-
184 Mr=Ap '65. (MIRA 18:6)

1. Institut geologii i razrabotki goryudnikh iskopayemykh,
Moskva.

CHERNIKOV, O.I. (Leningrad, Lesnoy pr., d.4, kv.62)

Vascular suture in lesions of the blood vessels of the ex-
tremities. Vest. khir. 70 no.6:88-94 Je'63 (MIRA 16:12)

1. Iz kafedry voyenno-polevoy khirurgii (nachal'nik - prof.
A.N.Berkutow) Voenno-meditsinskoy ordena Lenina akademii
imeni S.M.Kirova.

S/065/63/000/002/003/008
E194/E484

AUTHORS: Marinchenko, P.Kh., Chernikov, P.F.

TITLE: Changes in the quality of oil products during contact with rubber products

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.2, 1962, 43-45

TEXT: The effect of exposure to rubber on the quality of fuels and lubricants was studied because such exposure often occurs in practice. Samples of rubber hose 160 mm long with aluminum stoppers at each end were placed in a metal container filled with oil and placed in a thermostat at temperatures up to 40°C, for periods up to 120 hours. The fuel property found to change most on this treatment was the true resin content determined by the method of standard ρ_{OCT} (GOST) 1567-56 and this property was, therefore, used as a criterion. The resistance of various rubbers to oil and fuel was also assessed by placing strips of them in the fuel or lubricant in a container in a thermostat and again the change in resin content was used as a criterion. Unlike normal petroleum resins, those which form in oil products on exposure to vulcanized rubber consist of a mixture of softeners

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Changes in the quality ...

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(petrolatum, stearine, rosin etc), anti-freeze (dibutylphthalate, dibutylsebacinate, complex esters etc) and anti-oxidants. These substances are only partly extracted from the rubber and one effect is to increase the elasticity of the rubber and its resistance to frost; these properties, however, revert when the rubber is left out of contact with oil for a period. The resin content of the oil product rises most rapidly in the first 20 to 50 hours, the more so as the temperature is raised, and then usually steadies; the highest figure after 120 hours was aviation gasoline grade B-70 (B-70) at 40°C, which contains about 3000 mg/100 ml resin and the lowest was fuel U-1 (Ts-1) at 20°C, which contains about 600 mg/100 ml. It follows that if fuel is left in a hose for periods up to 5 hours it may become unsuitable for use and where rubber hoses up to 1.5 km long are used the first amounts of fuel pumped through the hose may contain excessive amounts of resin. After prolonged storage, the resin content is reduced by precipitation as sludge but this may take up to 10 days and in practice permissible values are best achieved by dilution. Gasoline engine bench tests were made on fuel

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Changes in the quality ...

S/065/63/000/002/003/008
E194/E484

containing 210 mg/100 ml resins and in 100 hour test the engine power output fell by 4.5%, the fuel consumption rose by 4% and the inlet valve stems, the valves and pistons were heavily lacquered. There are 4 figures.

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MARINCHENKO, P.Kh.; CHERNIKOV, P.F.

Change in the quality of petroleum products during contact with
rubber articles. Khim.i tekhn.topl.i masel 8 no.2:43-45 F '63.
(MIRA 16:10)

CHERNIKOV, P.P.

Modern industrial gas flow meters. [Izd.] Sekts. prib. tepl.
kontr. LONITOPRIBOR no.2: 207-213 '54. (MLRA 8:6)
(Gas meters)

S/121/62/000/010/004/005
D040/D112

AUTHORS: Chernikov, P.V., and Posashkov, Ya.A.

TITLE: Device for contactless setting of diamond and carbide cutters

PERIODICAL: Stanki i instrument, no. 10, 1962, 39

TEXT: This device (Fig.1) for setting diamond or carbide boring tools was developed at the Gor'kovskiy avtomobil'nyy zavod (Gor'kiy Automobile Plant) and has eliminated damage to cutting edges caused by contact with the setting prism or the post indicator. The device has the following components: a duralumin prism (1) and a mobile duralumin plate (2) attached to the prism by four steel pins; a reading microscope (4) fixed to the plate by a steel clip (3); a differential screw (5) for moving the plate, having a 2M8x0.75 thread on its bottom portion and a 1M10x1 thread on its top portion; threaded steel sleeves (6) and (7), one press-fitted in the prism, and the other in the plate. A dial on the screw has 25 divisions, and the plate (2) is moved 0.01 mm when the screw is turned by one division. A spring (8) serves to select the gap in the screw. A 6 v electric bulb (11) in the

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Device for contactless setting of ...

S/121/62/000/010/004/005
D040/D112

socket (10) on the lug of the plate (2) illuminates the cutter. The microscope can be set for x40, x50 and x60 magnification and has an additional grid with a cross, and a scale grid with 0.002 mm divisions. Cutters have to be set by comparison either with a blunted cutter or with a reference piece. The device is set up on the tool arbor (9) by means of the prism (1) so that the blunted cutter is opposite the microscope objective, after which the screw (5) is turned until the horizontal line of the cross coincides with the highest point on the cutting edge of the cutter. Then the blunted cutter is removed and replaced by a new one, whose cutting edge is matched with the horizontal line of the cross. Thus the cutter is set to dimension. The device also enables the quality of the cutting edges to be inspected in the working position. There are 2 figures. [Abstracter's note: Essentially complete translation]. ✓

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Device for contactless setting of ...

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D040/D112

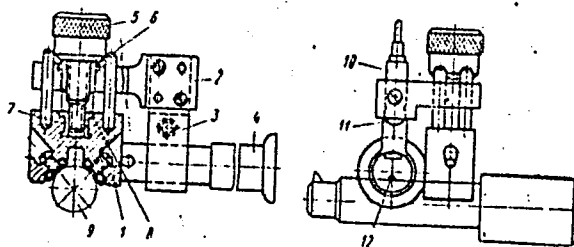


Fig. 1

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CHERNIKOV, P. V.; POSASHKOV, Ya. A.

Device for noncontact adjustment of diamond and hard-alloy
cutting tools. Stan. i instr. 33 no.10:39 0 '62.
(MIRA 15:10)

(Metal-cutting tools)

CHERNIKOV, P.V.; ZAYTSEV, L.S.; ZHAVORONKOV, V.N.

Attachment for grinding and lapping cutting tools along the tail surfaces and radii. Stan.i instr. 34 no.3:43-44 Mr '63.

(MIRA 16:5)

(Grinding machines--Attachments)

TROITSKAYA, D.N., inzh.; ZHAVORONKOV, V.N.; CHERNIKOV, P.V., inzh.

Diamond grinding of ceramic tips. Vest. mashinostr. 43
no.7:70-72 J1 '63. (MIRA 16:8)

(Grinding and polishing)

CHERNIKOV, P.V.

Rolls for simultaneous burnishing of the two ends of parts. Stan.
1 instr. 36 no.9:38-39 S '65. (MIRA 18:10)

CHERNIKOV, P.V., incl.

Investigating the productivity of the flat lapping process, Vest.
mashinost. 45 no.9:50-52 S '65.

(MIRA 18:10)

L 5285-66 EWT(d)/EWT(m)/EWP(v)/EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l)/EWA(h) JD

ACC NR: AP5022038

SOURCE CODE: UR/0286/65/000/014/0105/0105

AUTHORS: Chernikov, P. V.; Zaytsev, L. S.; Krivdin, B. M.

ORG: none

44 55

44 55

44 55

TITLE: A method for working with a hard alloy tool bit. Class 49, No. 173092

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 105

TOPIC TAGS: mechanical metal removal, metalworking, metal cutting, cutting tool, metal cutting machine tool

ABSTRACT: This Author Certificate presents a method for cutting with a hard alloy tool bit. To increase the wear resistance of the tool bit, the work is conducted with a cyclically altered longitudinal feed changing from detail to detail or during working of the same detail. Thus, the first detail may be worked at a feed 15-25% below the optimal, the second detail at the optimal feed, and the third at a feed 15-25% above optimal. After this, the cycle is repeated in the same or in some other order.

SUB CODE: IE/

SUBM DATE: 03May63/

ORIG REF: 000/

OTH REF: 000

Card 1/1

CHERNIKOV, S.

Increase control in financing the capital investments of
consumers' cooperatives. Den.i kred. 19 no.10:44-50 0 '61.

(Banks and banking) (Cooperative societies--Finance) (MIRA 14:10)

CHERNIKOV, S.

Control in supplying credit for the building of motion-picture
theaters. Den. i kred. 20 no.4:49-55 Ap '62. (MIRA 15:4)
(Banks and banking) (Motion-picture theaters--Finance)

CHERNIKOV, S.

Ardent zeal for work. Mor. flot. 24 no.11:3-4 II '64.

(MIRA 18:8)

1. Pervyy pomoshchnik kapitana teplokhoda "Tikhoretsk".

CHERNIKOV, S.

Economic work in financing capital repairs. Den. i kred. 20
no.11:32-40 N '62. (MIRA 16:1)

(Industrial equipment—Maintenance and repair)
(Banks and banking)

CHERNIKOV, S.

Analyzing industrial enterprise reports on capital repairs of
fixed assets. Den.i kred. 21 no.4:62-72 Ap '63.

(MIRA 16:4)

(Amortization)

(Industrial equipment—Maintenance and repair)

(Factories—Maintenance and repair)

38340

13.2.500

S/024/60/000/006/006/015
E031/E481

AUTHOR: Chernikov, S. A. (Moscow)

TITLE: Symmetric Self-Excited Oscillations of a Gyrostabilizer
PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, No.6, pp.133-142

TEXT: The presence of non-linearities in such systems can give rise to self-excited oscillations of unacceptable amplitude and frequency. The parameters of the system must be so chosen that either the oscillations do not occur or, if they do, that their amplitude and frequency are within acceptable limits. Since the equations of the system are fourth order differential equations, exact methods do not as a rule give results in a convenient form for practical usage. Harmonic linearization followed by the use of an electronic analogue gives a two stage solution of the problem. In the first stage, the analysis is theoretical on an idealized system; in the second stage, the actual (non-linear) system is studied. The case of non-linearity in the precession angle transducer and dry friction in the axis of stabilization is considered first. By adopting a suitable form for the solution and simplifying the non-linearity, the equation for the frequency can be

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S/024/60/000/006/006/015
E031/E481

Symmetric Self-Excited Oscillations of a Gyrostabilizer

found. In the course of the calculations, the conditions under which the method can be applied are derived and, although they are not always satisfied in the present case, the method is used because the approximation is good. The amplitude and frequency are finally obtained graphically owing to the complexity of the expressions. The question of stability boundaries is next discussed. The behaviour of the system is discussed in terms of a non-dimensional parameter K . The amplitude and frequency both increase with K . For other parameters being fixed, the frequency and amplitude are reduced as the zone of insensitivity is increased. The case of zero zone of insensitivity is also considered. The second problem is similar to the first except that the precession angle transducer is linear. For simplicity, the time constant of the rotor is set zero, this effect being investigated by the electronic analogue. The condition for stable self-excited oscillations is derived and the variation of the frequency and amplitude in terms of the parameters of the system is discussed. As the kinetic moment increases the amplitude and frequency fall, in contradistinction to the non-linear transducer

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88340

S/024/60/000/006/006/015
E031/E481

Symmetric Self-Excited Oscillations of a Gyrostabilizer

case, where they are independent of this parameter. The behaviour with respect to K is as before. The stability boundaries are determined. The analogue shows that as the time constant of the rotor increases, the amplitude increases and the frequency decreases, while the region of self-excited oscillations becomes greater. In conclusion, it is stated that the presence of dry friction is shown to have a significant effect on the behaviour of the system, that the parameters of the system can be chosen to limit the frequency and amplitude to a given region and that the method is satisfactory. There are 6 figures and 7 Soviet references. ✓

SUBMITTED: June 11, 1960

Card 3/3

13.2510

S/024/62/000/002/005/012
E140/E135

AUTHOR: Chernikov, S.A. (Moscow)

TITLE: Unsymmetrical self-oscillations in a gyrostabiliser

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
tekhnicheskikh nauk. Energetika i avtomatika,
no.2, 1962, 104-114

TEXT: The author has previously studied the proper motion of a gyrostabiliser (Ref.1: Izv. AN SSSR, Energetika i avtomatika, no.6, 1960). Since, however, the device is always under the influence of perturbations, its forced motion is also of interest. The equation of motion of a single-axis power gyrostabiliser with contactor control is derived, taking into account dry friction in the stabilisation axis and the motion of the base. The equivalent circuit of the control system is developed from the equation and the performance of the system analysed. The stability conditions, amplitude and frequency of the self-oscillations, are found. The analysis shows that: the operating regime of the gyrostabiliser depends substantially on the magnitude of the external disturbance; a design based
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✓B

Unsymmetrical self-oscillations ... S/024/62/000/002/005/012
E140/E135

on neglect of external disturbances can only be considered to be a first approximation; the article gives formulae permitting the design to satisfy prescribed self-oscillation conditions, static and dynamic errors, taking into account possible constant and slowly varying perturbations. The method of describing functions used in the way proposed in the article will not be in error by more than 10-15%. There are 6 figures.

SUBMITTED: November 4, 1961

Card 2/2

CHERNIKOV, S. A.

"Stability and Natural Oscillations in Inhomogeneously Rigid Gyro Systems with Backlash Under External Influences"

report presented at the Scientific-technical Conference on Modern Gyroscope Technology Ministry of Higher and Secondary Special Education RSFSR, held at the Leningrad Institute of Precision Mechanics and Optics, 20-24 November 1962

(Izv. vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963)

CHERNIKOV, S. A.

ADP Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE ON MODERN GYROSCOPE TECHNOLOGY (USSR)

Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963, 156-158. S/146/63/006/002/010/010

The Fourth Conference on Gyroscope Technology, sponsored by the Ministry of Higher and Secondary Special Education RSFSR, was held at the Leningrad Institute of Precision Mechanics and Optics from 20 to 24 November 1962. The conference was attended by representatives from 93 organizations in 30 Soviet cities, including educational establishments, scientific research institutes, design bureaus, and industrial concerns. The following are some of the topics covered in the 92 papers presented and discussed at the conference. Vibrations of a gyroscope pendulum with a movable suspension in a nonuniform gravitational field: M. Z. Litvin-Sedoy, Senior Scientific Worker; improving dynamic characteristics of some gyro instruments and devices: A. V. Reprikov, Docent, Candidate of Technical Sciences; some problems of the dynamics of a gyroscope with an electric drive installed in a gimbal suspension: S. A.

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AID Nr. 990-6 14 June

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SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd]

S/146/63/006/002/010/010

Kharlamov, Engineer; problems of the theory of the inertial method for measuring aircraft acceleration: I. I. Pomykayev, Docent, Candidate of Technical Sciences; determining the drift of a floated-type integrating gyroscope without the use of a dynamic stand: G. A. Slomyansky, Docent, Candidate of Technical Sciences; natural damping of nutational vibrations of a gyroscope: N. V. Gusev, Engineer; motion of a not quite symmetrical gyroscope pendulum with vertically movable support: A. N. Borisova, Aspirant; gyroscope-type inclinometer for surveying vertical freezing wells: V. A. Sinitsyn, Candidate of Technical Sciences; effect of joints between channels in triaxial gyro-stabilized platform: L. N. Slezkin, Engineer; theoretical proposal for the possible design of a generalized gyro instrument: M. M. Bogdanovich, Docent, Candidate of Technical Sciences; problem of drift in a power-type triaxial gyro stabilizer: V. N. Karpov, Engineer; methods of modeling random disturbances in gyro systems: S. S. Shishman, Senior Engineer; method of noise functions for investigating a system subjected to random

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AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd]

S/146/63/006/002/010/010

signals: G. P. Molotkov, Docent, Candidate of Technical Sciences; drifts in a gyro-stabilized platform as a result of the effect of cross joints under determined and random disturbances: B. I. Nazarov, Docent, Candidate of Technical Sciences; stability and natural oscillations in inhomogeneously rigid gyro systems with backlash under external influences: S. A. Chernikov; methods of designing a gyro vertical with automatic latitude and course corrections: A. V. Til', Candidate of Technical Sciences; use of asymptotic methods in solving problems of the motion of an astatic gyroscope in gymbol suspension: D. M. Klimov, Candidate of Physical and Mathematical Sciences, and L. N. Slezkin; theory of aperiodic gyro pendula: V. S. Moçhalin, Docent, Candidate of Technical Sciences; and selecting basic parameters of course gyros by using nomograms: V. P. Demidenko, Engineer. [AS]

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18985-63

Pl-4/Po-4/Pq-4

BC

EWI(a)/BDS

AEDC/ASD/AFMDC/ESD-3/APGC/SSD

Pg-4/Pk-4/

ACCESSION NR: AP3005684

S/0146/63/006/004/0110/0122

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AUTHOR: Chernikov, S. A.

TITLE: Investigating nonlinearities of gyroscopic systems by the harmonic-linearization method

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SOURCE: IVUZ. Priborostroyeniye, v. 6, no. 4, 1963, 110-122

TOPIC TAGS: gyroscope, gyroscope nonlinearity, harmonic-linearization method

ABSTRACT: A harmonic-linearization method developed by Ye. P. Popov, et al. ("Approximate methods of investigating nonlinear automatic systems," Fizmatgiz, Moscow, 1960) is applied to solving these gyrosystem problems: (1) ensuring a specified static accuracy; (2) determining the parameter relations that would keep the frequency and amplitude of self-oscillations within desired limits, or that would suppress oscillations altogether; and (3) determining the

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ACCESSION NR: AP3005684

effects of individual parameters on the frequency and amplitude of self-oscillations. Essential: "parasitic" nonlinearities are allowed for in the equations. These nonlinearities include: dry friction and play in the spindles of the universal joint; hysteresis, insensitivity, and power limitations of the amplifier; torque-characteristic limitation of and gearing play in the actuator motor; and insensitivity of the angle transducer. For various arrangements of nonlinear elements in the gyrosystem, formulas are developed in terms of reduced linear parts which are convenient for using logarithmic frequency characteristics in determining periodic modes of operation. It is proven that the dry friction and play in mechanical transmissions cause self-oscillations. Although in some cases the filtration of the reduced linear parts of a gyrosystem is very low, the error associated with the method does not exceed 10% or 15% in most cases. Orig. art. has: 5 figures and 23 formulas.

ASSOCIATION: Artilleriyskaya inzhenernaya akademiya im. F. E. Dzerzhinskogo
(Artillery Engineering Academy)

Cord 2/3

L 9097-65 EWT(d) Po-h/Pq-h/Pg-h/Pk-h/Pl-h TTP(c)/SSD/ASD/a-l-E/RACM
ESD(h)/ABD(l) ESD(c) ESD(ES) AFMD
ACCESSION NR AP4041988

AUTHOR: Chernikov, S. A. (Moscow)

TITLE: Analysis of nonlinear automatic control systems with external interference

ИЗДАНИЕ В СССР Изд. Техническое

TOPIC TAGS: automation, automatic control system, nonlinear control system, external interference, self oscillation, free play, control system stability, feedback, backlash

ABSTRACT. Nonsymmetric self-oscillations and the stability of automatic control systems with a piezoelectric actuator and elastic deformations of the piezoelectric actuator are investigated. The stability of the control system is investigated using the method of averaging. The results of the investigation are presented in the form of graphs and tables.

1960). Two variations of the block diagram of the system and the "dead zone" nonlinearity: $\gamma(x)$ assumed for backlash, are shown in Figure 1 of the Enclosure. The transfer function of the linear part of the system (Fig. 1a) is $G(s) = \frac{K}{s(s + \lambda)}$, where K is the static gain, λ is the damping coefficient. Its stability is determined by the location of the poles in the complex plane. For $\lambda > 0$, the system is stable. For $\lambda < 0$, the system is unstable. The system with backlash (Fig. 1b) is a nonlinear system. Its stability is determined by the location of the poles of the linear part and the nonlinearity. For $\lambda > 0$, the system is stable. For $\lambda < 0$, the system is unstable. The system with backlash and dead zone (Fig. 1c) is a nonlinear system. Its stability is determined by the location of the poles of the linear part and the nonlinearity. For $\lambda > 0$, the system is stable. For $\lambda < 0$, the system is unstable.

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FL 9097-65

ACCESSION NR: AP4041968

of a harmonically linearized character is
 $\dot{\alpha} = -\alpha$. This makes the nonlinear
 real axis. The periodic solution is stable
 if $\alpha > 0$, and unstable if $\alpha < 0$. The
 linearization goes from the third
 quadrant, can be found by Popov's method
 $\text{Re} \{ Z(j\omega) \} > -1/k$. Solution
 of the nonlinear system. Solution for the
 nonlinear system. It is shown that in
 the system, the wider the self-oscillation
 period. An example using a gyro system
 stabilized as an automatic control system
 magnitude and plane of application of
 a constant moment to the load axis can
 suppress self-oscillations. The harmonic
 a relatively simple analysis and synthesis
 sufficient for engineering purposes (1).

nonlinear element with 10 nodes

[illegible]

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L 9097-65

ACCESSION NR: AP4041968

backlash to react differently to perturbing moment X and Y can be used for the evaluation of the degree of self-oscillation. The method is used for other control systems with non-linear characteristics. It has 48 equations and 7 figures.

ASSOCIATION none

SUBMITTED: 16Mar63

ENCLOSURE

SUB CODE 10000

REF ID: A605

OTHER

Card 3-4

L 9097-65

ACCESSION NR: AP4041968

ENCLOSURE: 01

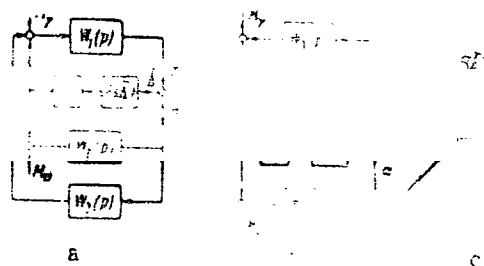


Fig. 1. Block diagram of an automatic control system: a. Feedback with respect to load position. b. Feedback with respect to motor shaft position. c. Static characteristics of the nonlinear element. $W_1(p)$ and $W_2(p)$ are the transfer functions of the motor, load and regulator, respectively, and M_1 and M_2 are moments of external interference.

Card 4 4

L 44774-65 EWT(d)/EWP(1) Pg-4/Pk-4/Pl-4/T-4/Tr-4 Top/4 55
06/12/2000

ACQUISITION OF APPLICABLE

AUTHOR: Chernikov, S. A.

TITLE: Disturbance autooscillations of a rigid gyroscopic system in the
face of an external disturbance

SOURCE: INTEL. Priboystroyeniye, v. 1, no. 1, 1986-97

TOPIC TAGS: gyroscope, gyroscope stability, gyroscopic linearization, automatic system, gyroscope autooscillation

ABSTRACT: Play and "dry" friction in the mechanical transmissions of gyroscopic systems lead to autooscillations. The conditions for the existence of such autooscillations are determined. It is shown that the system is stable with respect to small disturbances if the conditions for the existence of autooscillations are not satisfied. The conditions for the existence of autooscillations are determined by the conditions for the existence of self-excited oscillations. The conditions for the existence of self-excited oscillations are determined by the conditions for the existence of self-excited oscillations. In this way, the conditions for the existence of self-excited oscillations are determined by the conditions for the existence of self-excited oscillations.

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ACCESSION NR: AP5011739

ratio of system parameters, will lead

to a significant increase in the frequency
of the system parameters. The system
parameters will be increased by the
system parameters. The system parameters
will be increased by the system parameters
and the system parameters.

ASSOCIATION: Voyennaya inzhenernaya

ESR (Engineering Association)

SUBMITTED: 04 Aug 64

NO REF SCV 003

Card 3/37

CHERNIKOV, Stepan Andreyevich; KUVSHINOV, Yakov Ivanovich; DMITRIYEV,
L.A., red.; SHESHNEVA, E.A., tekhn. red.

[Operation of tractors and motor vehicles under winter conditions] Ekspluatatsiia traktorov i avtomobilei v zimnikh usloviakh. Moskva, Izd-vo M-va sel'.khoz. RSFSR, 1963. 77 p.
(MIRA 16:6)

(Motor vehicles--Cold weather operation)
(Tractors--Cold weather operation)

CHERNIKOV, S. N.

Pereneseniye odnoy teoremy frobenius'a na Beskonechnyye gruppy. Matem. sb., 3 (45), (1938), 413-416.

K teoreme Frobenius'a. Matem. sb., 4 (46), (1938), 531-540.

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Beskonechnyye Lokal'no razreshimyye gruppy. Matem. sb., 7 (49), (1940), 35-64.

K teorii beskonechnykh spetsial'nykh grupp. Matem. sb., 7 (49), (1940), 539-546.

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K teorii lokal'no razreshimykh grupp. Matem. sb., 13 (55), (1943), 317-33.

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SO: Mathematics in the USSR, 1917-1947
edited by Kurosh, A. G.,
Markushevich, A. I.,
Rashevskiy, P. K.
Moscow-Leningrad, 1948

CHEPNIKOV, S. N.

RT-737 A generalization of the Kronecker-Capelli theorem on a system of linear equations/ Obobshchenie teoremy Kronekera-Kapeli o sisteme lineinykh uravnenii. Matematicheskii Sbornik (N.S.), 15(3): 437-448, 1944.

CHERNIKOV, S. N.

Mathematical Reviews
Vol. 14 No. 7
July - August, 1953
Algebra

8-10-54
LL

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Černikov, S. N. On the theory of infinite p -groups.
Doklady Akad. Nauk SSSR (N.S.) 50, 71-74 (1945).
(Russian)
A p -group is called complete provided, for each natural n , every element is a product of p^n th powers of elements of the group. Every complete p -group with an ascending central series is abelian. In the infinite p -group $\mathfrak{P}$ suppose that, for each order, the set of elements having the specified order is finite: then the center of $\mathfrak{P}$ (1) has finite index; (2) contains a subgroup of finite index which is a direct product of finitely many primary abelian groups of type p^∞ , and (3) contains a finite subgroup $\mathfrak{K}$ such that $\mathfrak{P}/\mathfrak{K}$ is a direct product of finitely many primary abelian groups of type p^∞ and a finite p -group. R. A. Good (College Park, Md.).

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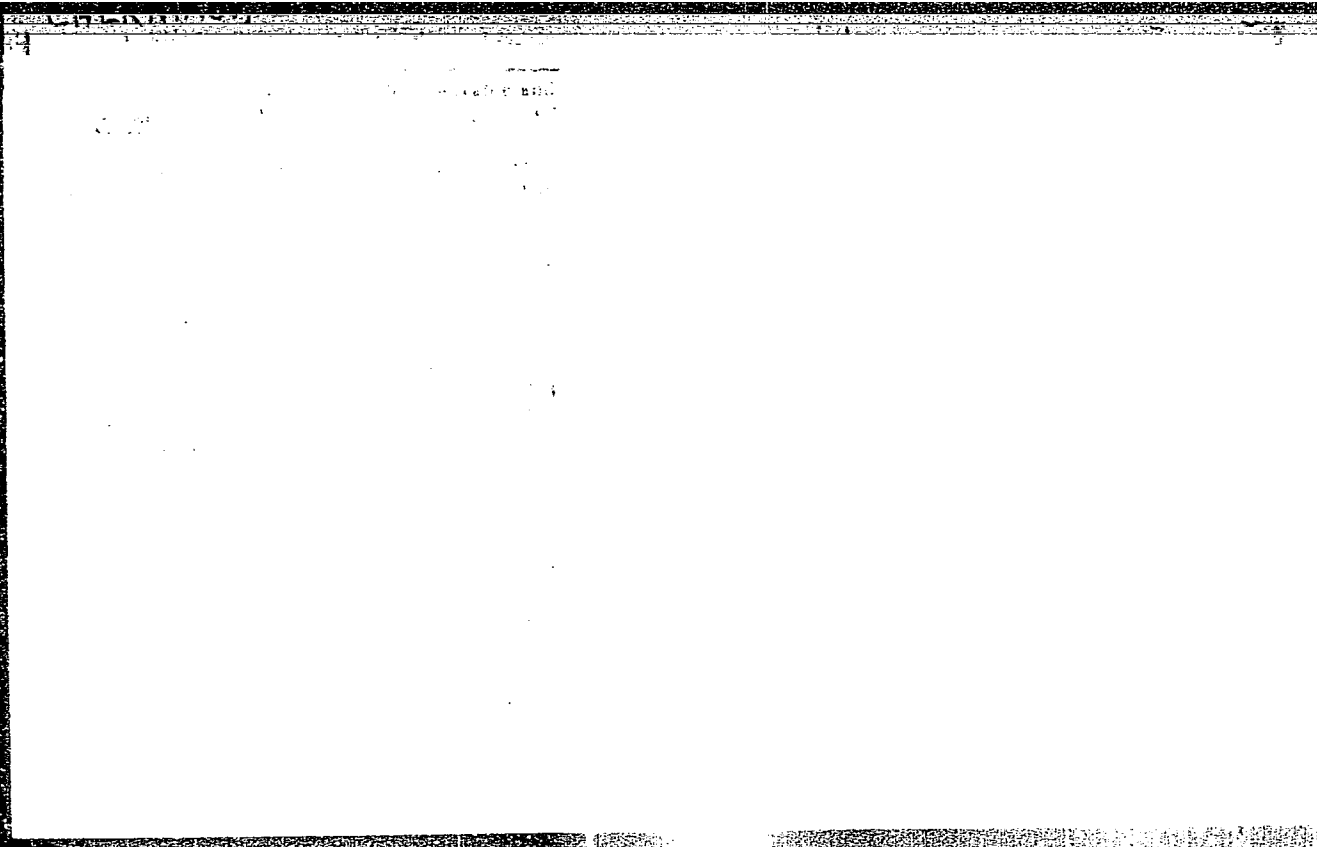
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CHERNIKOV, S. N.

"The Theory of Finite p -Expansion of Abelian p -Groups," Dok. AN 58, No. 7, 1947

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CHERNIKOV, J. N.

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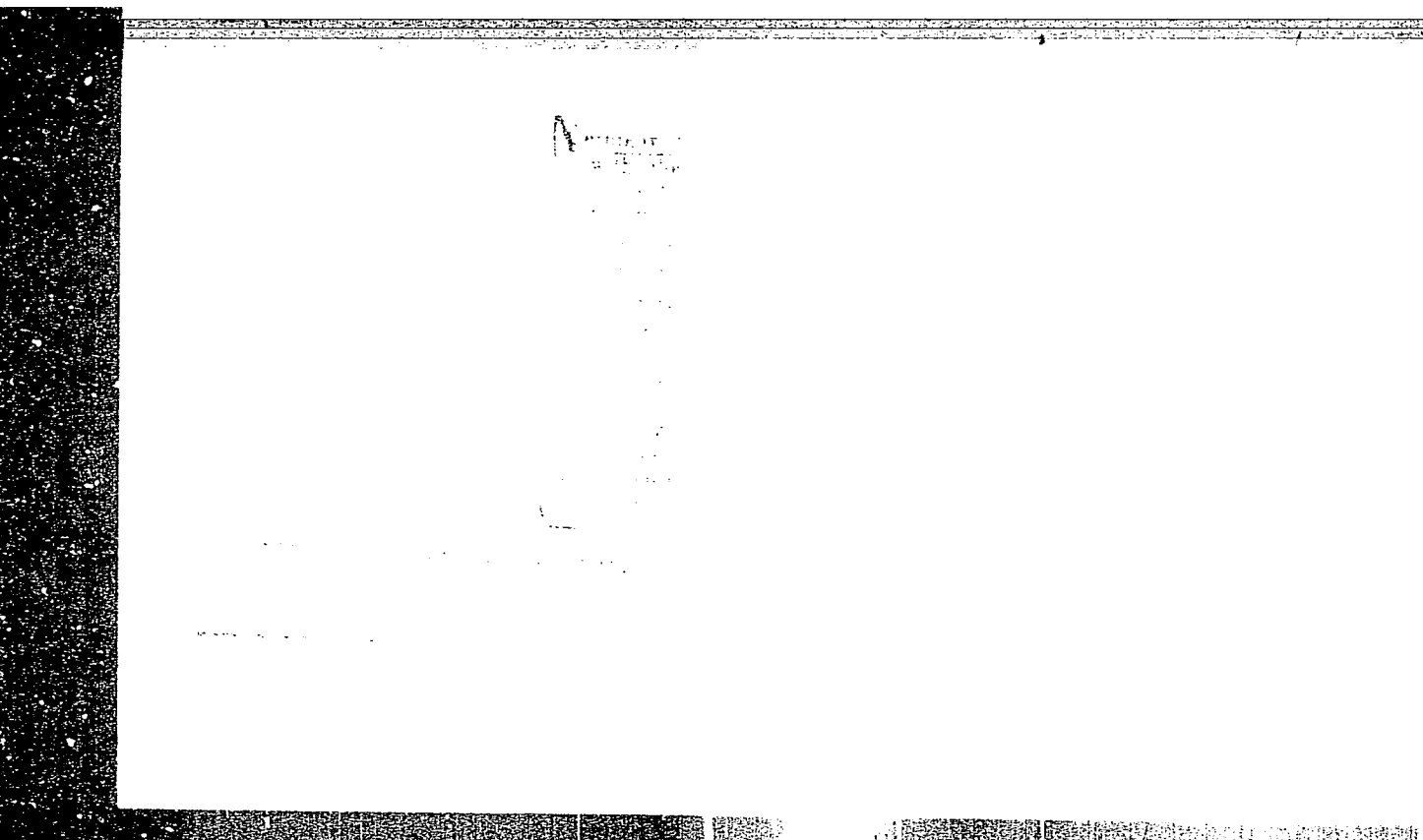
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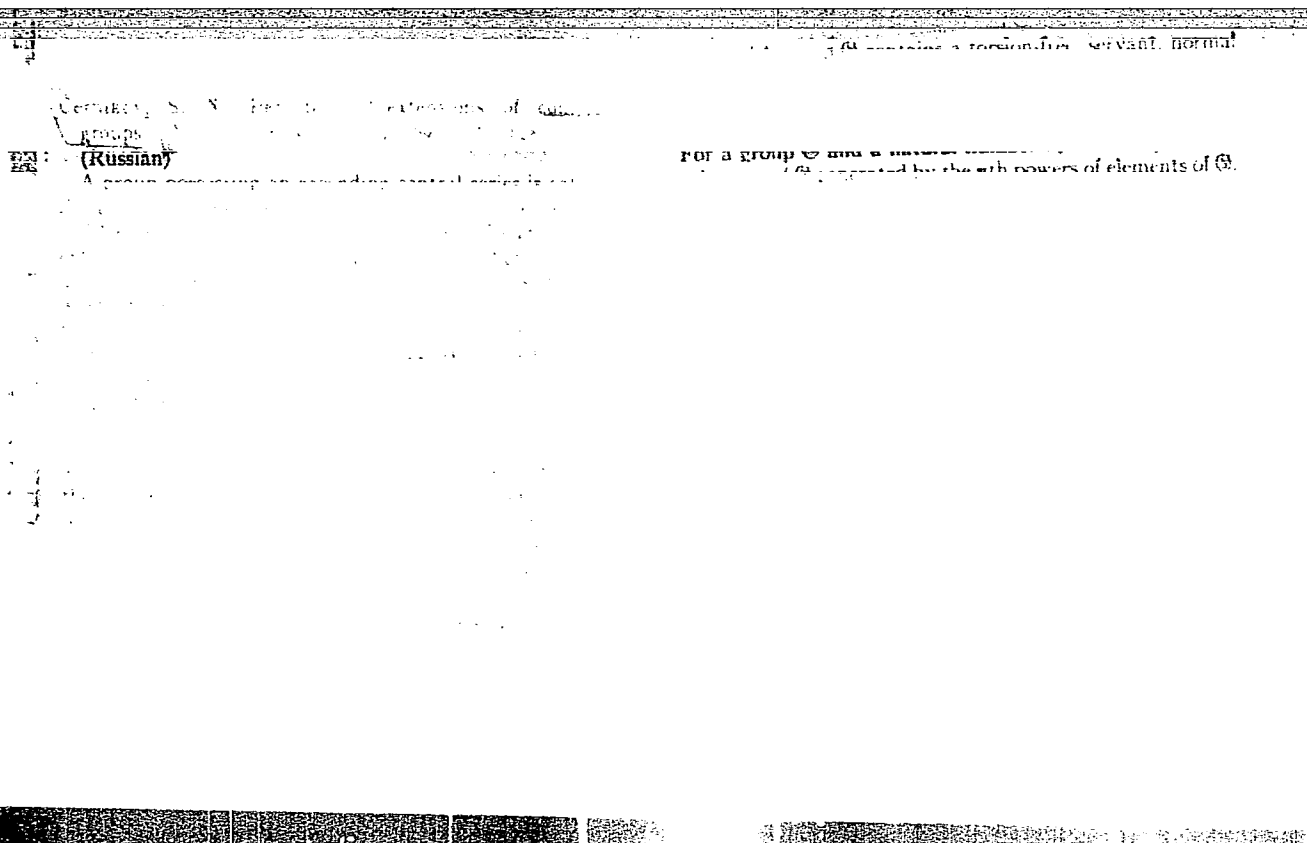
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"APPROVED FOR RELEASE: 06/12/2000

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Cumulator, S. N. On special groups. Mat. 9/2
271001, 185, 200 (1951).

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CHERNIKOV, S.N.

USSR/Mathematics - Inequalities

Mar/Apr 53

"Systems of Linear Inequalities," S. N. Chernikov

Uspehi Matematicheskikh Nauk, Vol. VIII, No 2(54), pp 7-73

Studies finite systems of linear inequalities, i.e., systems of the form $a_{j1}x_1 + a_{j2}x_2 + \dots + a_{jn}x_n + a_j \geq 0$ ($j=1,2,\dots,m$), where a_{jk} and a_j are arbitrary real numbers; geometrically, each inequality of this system determines one of two half-spaces of the n -dimensional Euclidean space R^n , the boundary plane of which half-spaces is determined by the border equation (when the 'equal' sign is taken) in the inequality selected. Cites G. Hardy, D. Littlewood, and G. Polya's book "Inequalities", translated into Russian, 1948, Foreign Lit Press, Moscow.

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CHERNIKOV, S.N. [reviewer]; KUROSH, A.G. [author].

"Theory of groups." A.G.Kurosh. Reviewed by S.N.Chernikov. Usp.mat.
nauk 8 no.6:173-176 N-D '53. (MLRA 6:12)
(Groups, Theory of) (Kurosh, A.G.)

CHERNIKOV, S. N.

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Mathematical Reviews
Vol. 14 No. 7
July - August, 1953
Algebra

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Kuroš, A. G. and Černikov, S. N. Solvable and nilpotent groups. Amer. Math. Soc. Translation no. 80, 57 pp. (1953).
Translated from Uspehi Matem. Nauk (N.S.) 2, no. 3(19), 18-59 (1947); these Rev. 10, 677. The translator has added footnotes, an appendix and additional bibliography, bringing up to date the status of many problems and conjectures mentioned in the paper.

CHERNIKOV, S. IV.

Mathematical Reviews
Vol. 15 No. 4
Apr. 1954
Analysis

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① M. Z. K.
Cernikov, S. N. Linear inequalities. Doklady Akad.
Nauk SSSR (N.S.) 89, 977-980 (1953). (Russian)
The author extends his results [Mat. Sbornik N.S.
15(57), 437-448 (1944); these Rev. 7, 109] to general
systems of linear inequalities with real coefficients, and
gives 11 theorems, without proof, on the consistency of such
systems.
T. S. Motzkin (Los Angeles, Calif.).

CHERNIKOV, S. N.

Mathematical Review.
June 1954
Algebra

10-5-54

LL

Černikov, S. N. Groups with systems of complementary subgroups. Doklady Akad. Nauk SSSR (N.S.) 92, 891-894 (1953). (Russian)

[See the preceding review.] P. Hall [J. London Math. Soc. 12, 198-200 (1937)] proved that a finite group G is solvable if and only if every Sylow subgroup of G is complemented. Results of a similar nature for (possibly infinite) groups are stated here without proof. For instance, each serving subgroup S ($nx \in S$ implies the existence of $y \in S$ with $nx = ny$) of periodic abelian G is complemented if and only if G is the direct product of a complete group G^* ($nx \in G^*$ implies $x \in G^*$) and of primary groups each of which has a bound on the order of its elements. If a group G has an increasing normal series with complete abelian factors, and if in G each complete abelian subgroup is complemented, then G is a complete abelian group. A locally nilpotent group in which each normal subgroup is complemented is the direct product of elementary abelian groups. A group G with complemented normal subgroups and with a principal ascending series with cyclic factors of prime order is completely factorizable, and conversely. (Cf. the last result mentioned in the preceding review.)

F. Haimo (St. Louis, Mo.).

USSR Mathematics - Inequalities

Card 1/1

Author : Rubinshteyn, G. Sh.
Title : General solution of a finite system of linear inequalities
Periodical : Usp. mat. nauk, 9, No 2(60), 171-177, 1954
Abstract : An extension of the work of S. N. Chernikov, "Systems of linear inequalities," Usp. mat. nauk, 8, No 2(54), 7-73, 1953. Other reference: Vypuklyye mnogogranniki [Convex polygons], Moscow-Leningrad, State Technical Press, 1950.
Submitted : July 8, 1953

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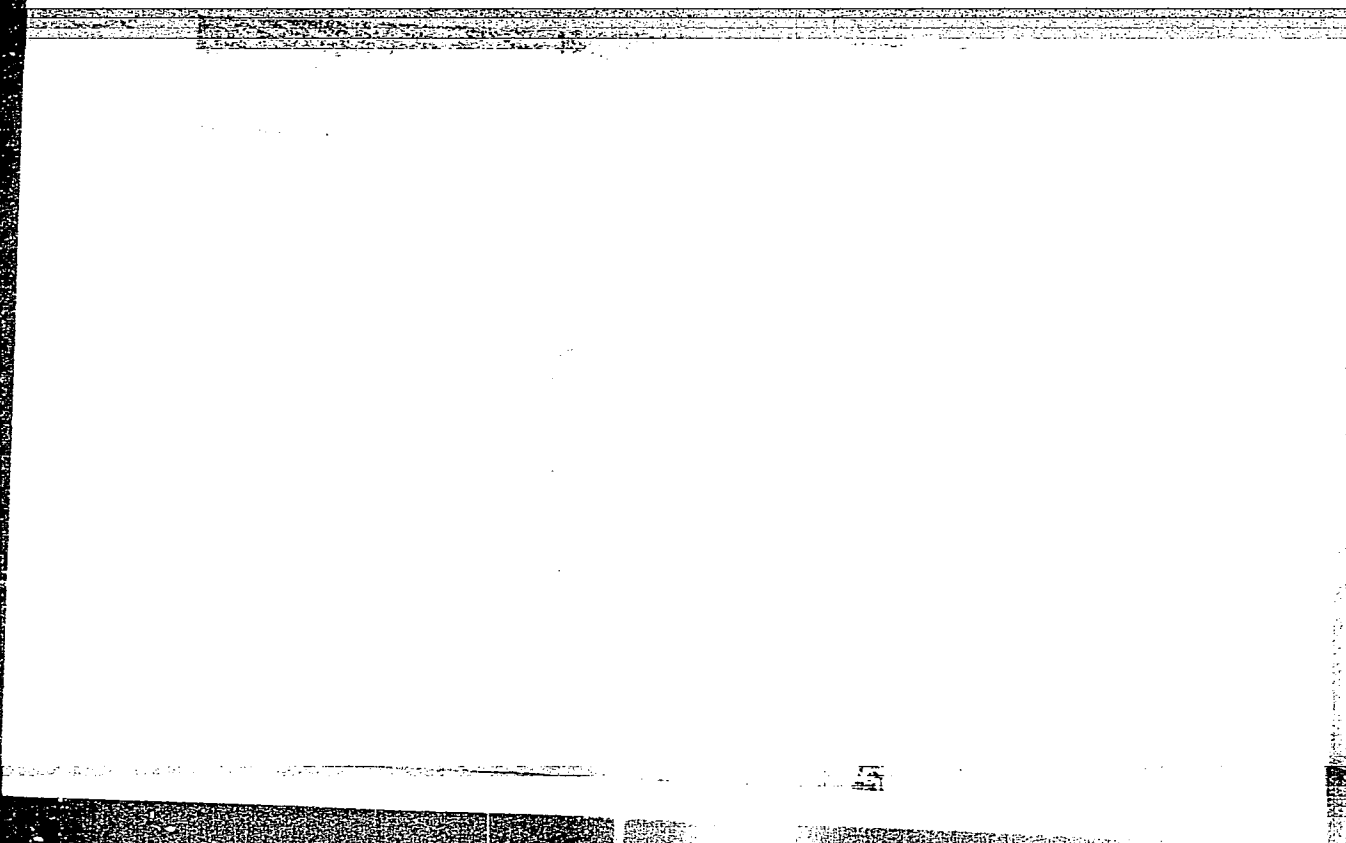
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USSR/ Mathematics - Linear inequalities

Card 1/1 Pub. 22 - 8/63

Authors : Chernikov, S.N.

Title : Positive and negative solutions of systems of linear inequalities

Periodical : Dok. AN SSSR 99/6, 913-916, Dec 21, 1954

Abstract : Some criteria for the existence of solutions of a system of linear inequalities or equations are presented, provided the inequalities or the equations are compatible in the system. Four references; 1-USSR (1915-1953).

Institute: The Molotov State University im. A.M. Gorkiy

Presented by: Academician A.N. Kolmogorov, October 23, 1954

CHERNIKOV, S.N.

✓ Chernikov, S. N. On complementation of the Sylow Π -subgroups in some classes of infinite groups. Mat. Sb. N.S. 37(79) (1955), 557-566 (Russian)

Schur's Factorisation Theorem states that in a finite group G a normal subgroup H whose order is prime to its index is complemented in G , that is, there exists a subgroup K of G such that $G=HK$, $H \cap K=1$. This fact can also be expressed as follows: the normal Sylow Π -subgroups of a finite group are complemented [for the definition of a Sylow Π -subgroup see Kuroš. The theory of groups, 2nd ed., Gostehizdat, Moscow, 1953, § 54; MR 15, 501; 17, 124]. The object of the present paper is to extend this result to certain classes of infinite groups. Without any restriction on the group it does not hold; for example, the periodic part of a mixed abelian group need not be a

direct summand, and if for such a group Π is taken as consisting of all the prime numbers, then the Sylow Π -subgroup is not complemented.

Whether in all periodic groups the normal Sylow Π -subgroups are complemented or not, is an open problem. Even under the — possibly — stronger condition that the group G is locally finite the author can prove the result only when some further restrictions are imposed on G (see below). But it is one of the main results of the paper that if the words "locally finite" are replaced by "locally normal", then all normal Sylow Π -subgroups are

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CERNIKOV, S. N.

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complemented. (Here a group G is called locally normal if the normal subgroup generated by an arbitrary finite subset is finite.) The author also proves that a locally normal group is locally soluble if and only if all its (ordinary) Sylow p -subgroups are complemented in it. This result extends P. Hall's well known theorem on finite soluble groups to arbitrary locally normal groups with soluble finite subgroups.

A more detailed account of the contents follows. In § 1 a new and useful concept is introduced: a Sylow Π -subgroup H of a group G is called arithmetically closed if its index in any subgroup of G containing H , if finite, is not divisible by any prime number in Π . Normal Sylow Π -subgroups are obviously arithmetically closed; so are Sylow Π -subgroups of locally soluble groups and Sylow p -subgroups of arbitrary groups. Theorem 1 gives for locally normal groups a "local" condition: a Sylow Π -subgroup H of a locally normal group G is arithmetically closed in G if and only if $H \cap N$ is an arithmetically closed Sylow Π -subgroup of N , where N is a finite normal subgroup of G . This result is used in § 2 to establish the main theorem, namely a "local" theorem for complementation. Theorem 2. An arithmetically closed Sylow Π -subgroup H of a locally normal group G is complemented in G if and only if $H \cap N$ is complemented in N , where N is a finite

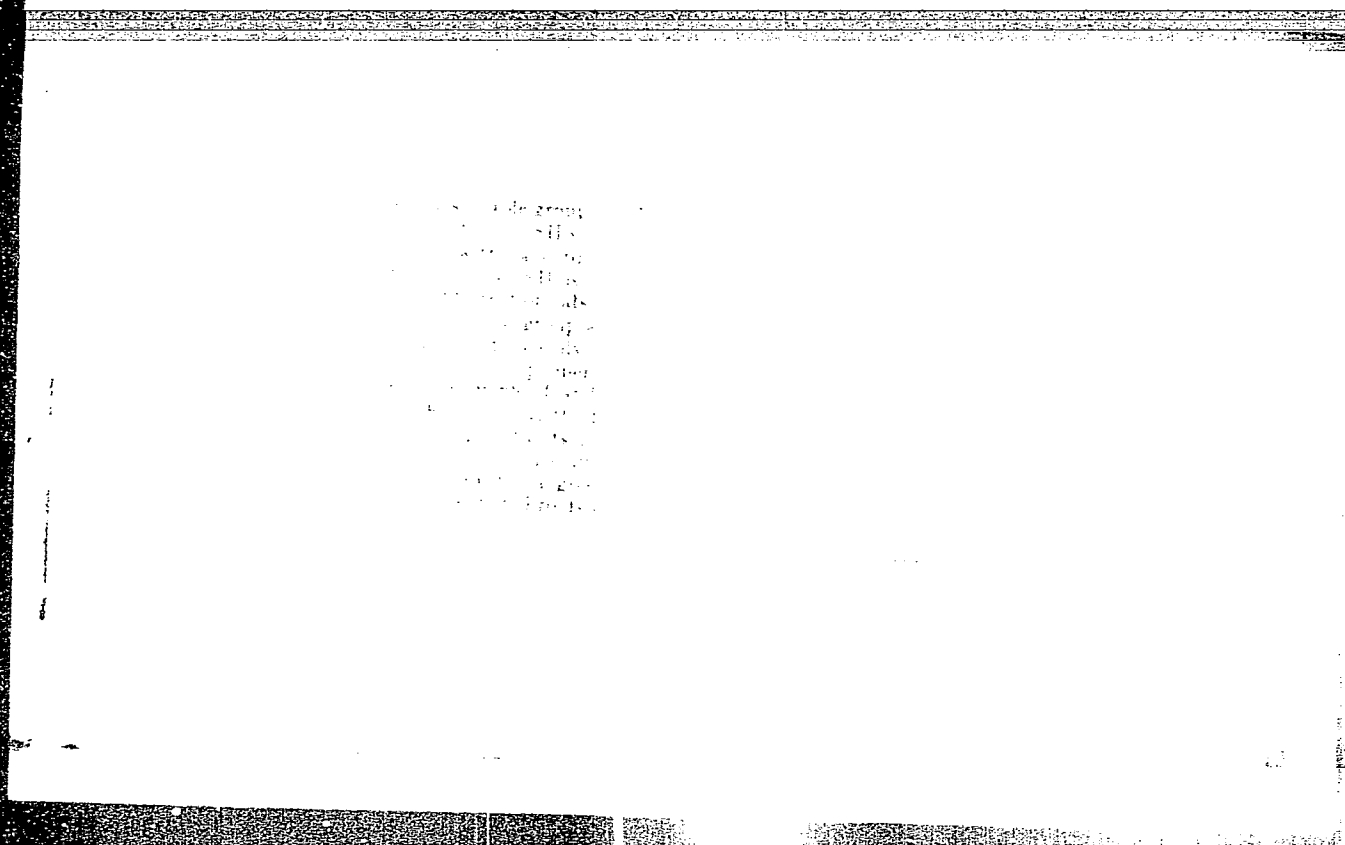
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CERNIKOV

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the operation of completion of projection sets in local systems of subgroups [see Kuroš, loc. cit., § 55]. § 3 then yields the generalisations of Schur's and Hall's theorems. Theorem 3. In a locally normal group G a normal Sylow Π -subgroup is complemented. If the complementary set Π' (consisting of the prime divisors of the orders of the elements of G that are not contained in Π) is not empty, then every complement of H in G is an arithmetically closed Sylow Π' -subgroup of G . Theorem 4. If a locally normal group G is locally soluble, then every Sylow Π -subgroup of G is complemented in G . Theorem 5. If a locally normal group G has a complemented Sylow p -subgroup for every prime number p , then it is locally soluble. Hence Theorem 6. A locally normal group is locally soluble if and only if all its Sylow subgroups are complemented in it. §§ 4 and 5 deal with more specialised situations. Theorem 7. If a locally finite group G is the product of a Sylow Π -subgroup H with its centraliser $Z(H)$, then H is a direct factor of G . Theorem 8. If in a locally finite group G the product of a normal Sylow Π -subgroup H with its centraliser $Z(H)$ has finite index in G , then H is complemented in G . Theorem 9. If a normal Sylow Π -subgroup H of a locally finite group G is an extension of a complete abelian group with minimal condition for subgroups by a finite group, then H is complemented in G .
K. A. Hirsch (London).

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CHERNIKOV, S.N.

SUBJECT USSR/MATHEMATICS/Algebra
 AUTHOR CHERNIKOV, S.N. CARD 1/2 PG - 400
 TITLE On strongly non-vanishing solutions of a system of linear equations.
 PERIODICAL Uspechi mat. Nauk 11, 2, 223-228 (1956)
 reviewed 11/1956

The question of the existence of a strongly non-vanishing solution x^0 ($x_i^0 \neq 0, i=1, \dots, n-1$) of the system

$$(1) \quad \sum_{i=1}^{n-1} a_{ji} x_i + a_{jn} = 0 \quad (j=1, \dots, n)$$

is reduced to the conditions for strongly positive solvability of the corresponding system of linear inequations. Obviously (1) has a strong solution x^0 being different from zero then and only then if $\sum_{i=1}^{n-1} \bar{a}_{ji} y_i + a_{jn} = 0$ with $\bar{a}_{ji} = \frac{|x_i^0|}{x_i^0} a_{ji}$

has a strongly positive solution or if this holds for the homogeneous system

$$(2) \quad \sum_{i=1}^n \bar{a}_{ji} x_i = 0 \quad (\bar{a}_{jn} = a_{jn}).$$

Conditions therefore were given without proof by Gummer (Amer.Math.Monthly 33, 88 (1926)). These here are derived in a precised form.- Let the rank of (2) be

Uspechi mat. Nauk 11, 2, 223-228 (1956)

CARD 2/2

PG .. 400

$r = n-1 > 0$ and let the matrix $(\bar{a}_{ji})$ contain no column consisting only of zeros. Then the system (2) is called simple. Erasing in a given system (2) of the rank $r > 0$ the terms with certain variables, then under certain conditions it can be changed to a simple system. Simple systems obtained in this manner are called "simple components" of (2). Then the following theorem is proved: If the system (2) of the rank r ($0 < r < n$) has a strongly positive solution, then every non-vanishing column of its matrix is also contained in the matrix of at least a simple component with a strongly positive solution. Reversely, if the system (2) of rank $r < n$ possesses simple components with a strongly positive solution such that from the columns of their matrices at least one matrix of the rank r can be composed, then (2) has a strongly positive solution.

The example $x_1 - x_4 = 0$, $x_2 - x_3 = 0$ with the solution 1,1,1,1 shows that not every system with a positive solution has a simple component with a positive solution.

CHERNIKOV, S.N.

SUBJECT USSR/MATHEMATICS/Algebra CARD 1/2 PG - 451
 AUTHOR CERNIKOV S.N.
 TITLE Positive and negative solutions of systems of linear inequations.
 PERIODICAL Mat. Sbornik, n. Ser. 38, 479-508 (1956)
 reviewed 12/1956

Let be given a system of linear inequations (or equations). The author investigates the question under which conditions all or certain components of the solutions are positive, negative, non-positive or non-negative. Most of the author's results already have been published in an earlier announcement (Doklady Akad. Nauk 99, 913-916 (1954)). Some simplifications are new. Let be given the compatible system

$$(1) \quad a_{j1}x_1 + a_{j2}x_2 + \dots + a_{jn}x_n - a_j \leq 0 \quad (j=1,2,\dots,m).$$

The author studies the questions: When all solutions of (1) are positive relative to a certain variable (e.g. x_k) ? If (1) has the rank $r > 0$, then the answer is given by the following theorem: In order that all solutions of (1) are non-positive relative to x_k it is necessary and sufficient that the matrix

Mat. Sbornik, n. Ser. 38, 479-508 (1956)

CARD 2/2

PG - 451

$$(2) \quad \begin{pmatrix} a_{11} & \dots & a_{1n} & a_1 \\ \dots & \dots & \dots & \dots \\ a_{m1} & \dots & a_{mn} & a_m \\ 0 & \dots & 0 & 1 \end{pmatrix}$$

possesses at least one minor Δ of the order $(r-1)$ being different from zero which satisfies the following conditions:

- 1) Δ contains a column which is determined by the k -th column of (2);
- 2) if the elements of this column are replaced by corresponding elements of any other column of (2), then $\Delta = 0$;
- 3) the ratios of Δ to the algebraic completions of the elements of its column which corresponds to the k -th column of (2), are non-negative.

INSTITUTION: Molotov.

CHERNIKOV, S. N.

"Einige Endlichkeitsbedingungen in der Theorie der unendlichen Gruppen"(Russisch)

paper submitted to the International Mathematical Union (IMU) Colloquium
on Finite Groups, Tübingen, West Germany, 18-25 August 1957.

Chernikov, Prof., Dr., S. N., Mathematics Inst., Molotov University.

A-3,092, 565

CHERNIKOV, S.N.

SUBJECT USSR/MATHEMATICS/Algebra CARD 1/1 PG - 833
AUTHOR CERNIKOV S.N.
TITLE Homogeneous linear inequations.
PERIODICAL Uspechi mat.Nauk 12, 2, 185-192 (1957)
reviewed 6/1957

The present paper contains the proofs and the elaboration to the announcement which the author has published already some years ago (Doklady Akad. Nauk 89, 977-980 (1953)).

20-114-6-11/54

AUTHOR: Chernikov, S. N.

TITLE: On Groups With Finite Classes of Conjugated Elements (O grup-pakh s konechnymi klassami sopryazhennykh elementov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 6, pp. 1177-1179 (USSR)

ABSTRACT: The present paper gives a new definition of the class of layer-like finite groups. Moreover several properties of groups with finite classes of conjugated elements are described. These properties are connected with the there existing subgroups with centralizers of finite index. Four theorems and several corollaries resulting from them are given and proved here. Theorem 1: The class of locally normal groups with special Silov subgroups (i.e. with Silov subgroups which satisfy the minimum condition for Abel's subgroups) agrees with the class of layer-like finite groups.
Corollary: A locally-normal group which satisfies the minimum condition for Abel's subgroups is layer-like finite.
Corollary: If all of Abel's subgroups of the locally-normal group are finite, then it is finite itself.

Card 1/2 Further corollaries are given.

20-114-6-11/54

On Groups With Finite Classes of Conjugated Elements

Theorem 2: In a locally-normal group G the centralizer of every Abel's subgroup has a finite index then and only then if it is a finite extension of its center.

Theorem 3: If in an infinite periodic group G , which has no elements of infinite height, the centralizer of all of its Abel subgroups has a finite index, then it is the direct product of an infinite Abel group and of a certain finite group.

Theorem 4: If the centralizer of every finite p -subgroup of the periodic group G has a finite index in G , the factor group of group G is with regard to its center a thin layer-like finite group. There are 2 references, 1 of which is Slavic.

PRESENTED: January 18, 1957, by P. S. Aleksandrov, Member of the Academy

SUBMITTED: March 17, 1956

ASSOCIATION: ~~Predstavleno akademikom P. S. Aleksandrovym.~~

Card 2/2

CHERNIKOV, S. N.

20-1-15/54

AUTHOR: Chernikov, S.N.

TITLE: On the Structure of Groups with Finite Classes of Conjugate Elements
(O stroynii grupp s konechnymi klassami sopryazhennykh elementov)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 1, pp. 60 - 63 (USSR)

ABSTRACT: This paper develops a mixture of mixed groups in which all classes of the conjugate elements are finite, with locally normal groups. First the following two lemmata are given and proved: Lemma 1: When the factor group of group G without rotation around its center is Abelian, the group G is Abelian. Lemma 2: When Abel's subgroup Z of the group G with finite classes of constant elements in G has a centralizer with finite index, its intersection with the center Z of group G has a finite index in it. With the aid of these lemmata the following theorems are obtained:

Card 1/2 Theorem 1: The group G has only then infinite classes of conjugate elements, when it is either locally normal or when in

20-1-15/54

On the Structure of Groups with Finite Classes of Conjugate Elements

its center such a subgroup O_L without torsion is contained so that the factor group G/O_L is locally normal.

Theorem 2: When the non-periodical group G is an expansion of its center by means of a locally finite group, its elements of finite order form an (apparently invariable) subgroup. The factor group of group G with regard to this subgroup is an Abel group without rotation. Finally two corollaries resulting from these theorems are given. There are 3 Slavic references, no figures.

ASSOCIATION: State University im. A. M. Gor'kiy, Molotov [now called Perm']
Gorkiy (Molotovskiy gosudarstvennyy universitet im. A.M.Gor'kogo)

PRESENTED BY: A.N. Kolmogorov, Academician, January 23, 1957

SUBMITTED: October 3, 1956

AVAILABLE: Library of Congress

Card 2/2

CHERNIKOV, S.N., Prof., Molotov State University im. A.M. Gorkiy.

"The Significance of Certain Finiteness Conditions in the Theory of Infinite Groups", (Section II)
paper submitted for Eleventh Intl Congress of Mathematicians, Edinburgh, Scotland
14-21 Aug 58.

paper presented

AUTHOR: Chernikov, S.N. (Perm') SOV/39-45-3-7/7
TITLE: On Layerwise Finite Groups (O sloyno-konechnykh gruppakh)
PERIODICAL: Matematicheskii sbornik, 1958, Vol 45, Nr 3, pp 415-416 (USSR)
ABSTRACT: The author shows that the class of the layerwise finite groups with finite Sylow subgroups contains only all possible layerwise finite direct products and all possible subgroups of these products.
There are 2 Soviet references.
SUBMITTED: May 14, 1957
1. Groups (Mathematics) 2. Mathematics--USSR

Card 1/1

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AUTHOR: Chernikov, S.N.

TITLE: On the general solution of a system of linear inequalities

PERIODICAL: Referativnyy zhurnal. Matematika, no.8, 1960, 23,
abstract no.8593. Uch. zap. Permsk. un-t, 1958, 16, no.3,
3-12

TEXT: This is a detailed representation and foundation of the method for determining the general solution of a system of linear inequalities which was proposed by the author (R.zh.Mat., 1953, 67, 68). The problem of the determination of the general solution of an arbitrary linear system of inequalities is reduced to the problem of the determination of the general solution of a system of homogeneous linear inequalities with a rank which is equal to the number of the unknowns. Furthermore the author proves the theorem:

If the rank of the system

$$H_j(x) = a_{j_1}x_1 + \dots + a_{j_n}x_n \leq 0 \quad (j=1,2,\dots,m) \quad (1)$$

is equal to the number of the unknowns, and if the linear form $H(x) = a_1x_1 + a_2x_2 + \dots + a_nx_n$ is the sum of any n linearly independent

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On the general solution...

forms $H_j(x)$ ($j=1,2,\dots,m$) then the system (1) has non-trivial solutions then and only then if the system

$$\begin{cases} H_j(x) \leq 0 \\ H(x)+1 = 0 \end{cases} \quad (j=1,2,\dots,m), \quad (2)$$

is compatible.

The general form of the solutions of the system (1) is obtained with the aid of system (2). Then the author obtains formulas for the general solution of an arbitrary system of linear inequalities (R.zh.Mat. 1955, 1660).

[Abstracter's note: The above text is a full translation of the original Soviet abstract.]

Card 2/2

CHERNIKOV, S.N.(Perm')

Nodal solutions of a system of linear inequalities. Mat.sbor. 50
no.1:3-24 Ja '60. (MIRA 13:6)
(Inequalities (Mathematics))

8

16(1)

AUTHOR:

Chernikov, S. N.

SOV/20-127-6-9/51

TITLE:

Some Classes of Groups With Conditions for Finiteness

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1176-1178 (USSR)

ABSTRACT:

The author formulates 10 theorems without proof on groups satisfying certain conditions of finiteness (chiefly conditions of minimality for subgroups). E.g.: An infinite group in which every infinite factor group of an arbitrary infinite subgroup has a proper normal divisor, is called a H-group.

Theorem 1: Every infinite group having an increasing normal series all the infinite factors of which are H-groups, is a H-group itself.

Theorem 2: No H-group has infinitely many classes of conjugate elements. An infinite group is called a C-group if every countable subgroup has an increasing normal series all the factors of which satisfy the maximum condition for subgroups.

Theorem 3: Every locally finite C-group satisfying the minimum condition for Abelian subgroups, has an Abelian normal divisor of finite index with the minimum condition for subgroups, and therefore it satisfies this condition itself.

Theorem 10: If an infinite locally finite group G with a normal

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system with finite factors for the infinite set π of prime numbers p has finite Sylow p -subgroups different from the unity, then it has also an infinite Abelian π -subgroup. The author mentions M.I.Kargapolov. There are 8 Soviet references.

ASSOCIATION: Permskiy gosudarstvennyy universitet imeni A.M.Gor'kogo
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S/039/60/052/001/008/009 XX
C111/C222

AUTHOR: Chernikov, S.N. (Perm')

TITLE: On Infinite Locally Finite Groups With Finite Sylow Subgroups¹⁶

PERIODICAL: Matematicheskiy sbornik, 1960, Vol. 52, No. 1, pp. 647-652

TEXT: Lemma 1 : If a finite group G for a prime number p has a normal divisor H so that the factor group G/H contains no p - elements (i.e. elements of the order p^α with $\alpha \neq 0$), then the index of the maximal normal divisor R of G which contains no p - elements, is not greater than $n!$, where n is the order of H .

Theorem 1 : Let p be a prime number, let p divide the order of the finite group G . Let $n_1, n_2, \dots, n_r$ be the orders of the factors of a certain invariant series of G which are divisible by p . Then the index of the maximal normal divisor of G , containing no p - elements, is not greater than $n_1 ! n_2 ! \dots n_r !$.

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Lemma 2:

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If a locally finite group G for a prime number p has a Sylow p -subgroup of the order p^n , then none of its normal systems has more than n factors containing p -elements.

The normal system $\mathcal{N}$ of a group is said to be finite-step with respect to a prime number p if it has at least one factor with p -elements and has no infinite factor of this kind.

Theorem 2 : If an infinite locally finite group G , having a finite-step normal system $\mathcal{N}$ with respect to a prime number p and having a finite Sylow p -subgroup, then its maximal normal divisor without p -elements has a finite index. If l is the number of those factors of the system $\mathcal{N}$ the order of which is divisible by p (according to lemma 2 this number is finite) and if m is the greatest of their orders, then this index is not greater than $[(mm^* + 1)!]^{m^* + 1}$, where m^* is the greatest integer contained in $\lg_2 m$.

Conclusion 1 : If an infinite locally finite group having a finite - step
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normal system with respect to each p of a finite set π of prime numbers, for every p of π has a finite Sylow p -subgroup, then its maximal normal divisor without p -elements (p runs through π) is of finite index in G .

Conclusion 2 : If an infinite locally finite group having a normal system with finite factors, has a finite Sylow p -subgroup, then it has a normal divisor of finite index which contains no p -elements.

Lemma 3 : If two subgroups $\mathcal{A}$ and $\mathcal{B}$ of a finite group G have the same order being relatively prime with their index, and if they have series with the same sequence of prime numbers corresponding to the series factors, then they are conjugate in G .

(A Sylow series is a normal series the factors of which are p -groups with non repeating prime numbers p).

Lemma 4 : If a finite group G is a semidirect product of two subgroups $\mathcal{A}$ and $\mathcal{B}$ with relatively prime orders, where $\mathcal{A}$ is invariant in G , then the normalizer in G of each Sylow subgroup of $\mathcal{A}$ contains a subgroup which is isomorphic to $\mathcal{B}$.

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Conclusion 1 : If the invariant subgroup $\mathcal{C}$ of a finite group G has an order relatively prime with its index and if the factor group $G/\mathcal{C}$ has a Sylow series, then all subgroups of G in G complementary to $\mathcal{C}$ are conjugate.

Conclusion 2 : Under the assumptions of the conclusion 1, every subgroup of G complementary to $\mathcal{C}$ is contained in the normalizer of at least one (for every p) Sylow p -subgroup of $\mathcal{C}$.

Theorem 3 : If an infinite locally finite group G has a normal system with finite factors and if, for the infinite set π of prime numbers p , it has finite Sylow p -subgroups different from 1, then it has an infinite Abelian π -subgroup.

The author mentions S.A. Chunikhin. There are 6 Soviet references.

SUBMITTED: January 26, 1959

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CHERNIKOV, S.N. (Perm')

Corrections to the article "Nodal solutions of systems of
linear inequalities." Mat. sbor. 52 no.1:652 S '60.

(MIRA 13:9)

(Inequalities (Mathematics))

CHERNIKOV, S.N.

Theorems on the separability of convex polyhedral sets. Dokl. AN SSSR
138 no.6:1298-1300 Je '61. (MIRA 14:6)

1. Predstavleno akademikom A. N. Kolmogorovym.
(Aggregates)

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16.5200

AUTHOR: Chernikov, S. N.

TITLE: The solution of linear programming problems by the elimination of unknowns

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 6, 1961, 1314-1317

TEXT: Let L be a real linear space and

$$f_j(x) - a_j \leq 0 \quad (j = 1, 2, \dots, m'), \quad (1)$$

$$f_j(x) - a_j < 0 \quad (j = m' + 1, \dots, m)$$

a system of linear inequalities on L . Let U be a subspace of L and s the rank of the system of functions $f_j(x)$ ($j = 1, 2, \dots, m$) relative to U . Let

$$t_1 f_{j_1}(x) + \dots + t_{s+1} f_{j_{s+1}}(x) \quad (2)$$

where $t_1 \geq 0, \dots, t_{s+1} \geq 0$ and $t_1 + \dots + t_{s+1} > 0$ is a linear

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The solution of linear programming ... combination of $s + 1$ functions $f_j(x)$, s of which are linearly independent over U . Two combinations (2) which differ only by a factor are said to be inessentially different. To every combination (2) which is identically equal to zero on U , the inequality

$$t_1 f_{j_1}(x) + \dots + t_{s+1} f_{j_{s+1}}(x) - (t_1 a_{j_1} + \dots + t_{s+1} a_{j_{s+1}}) < 0$$

is assumed to correspond, if in (2) at least one of the functions $f_j(x)$ ($j = m'+1, \dots, m$) has a coefficient different from zero, and to (2) there is assumed to correspond the same inequality, however, with the sign $\leq$ in the inverse case. A system of such inequalities is denoted as U -convolution of system (1). If (1) is so that from its functions no single combination (2) identically vanishing on U can be formed, then the U -convolution of (1) is called empty.

If V is a direct complement of U in L , then the U -convolution of (1) can be considered as a system of linear inequalities over $V(x \in V)$. For an arbitrary subspace U' of V the U' -convolution can be defined

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